

Book Review:

Distributed Systems: Principles and Paradigms (2nd Edition)

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This book presents the authors' updated view on the most relevant topics of distributed systems. This second edition shares most of the contents with the previous one [1] in terms of contents/chapters, but many of the chapters have been updated and some new material has been added. Most notably, a new chapter on distributed systems architectures has been added as Chapter 2, giving a general view on the ways distributed systems can be organized.

As (only) explained in the Preface, the book is divided two parts: Chapter 1 to Chapter 9 devoted to discussing principles, and Chapter 10 to Chapter 13 devoted to explaining distributed applications development (related to paradigms, according to authors' description). There is a significant effort in Chapters 10-13 in the description of the architectural style associated to each distributed application development approach. For distributed objects-based and distributed file systems (described in Chapter 10 and Chapter 11 respectively) the association with a *corresponding* architectural style is clearly explained. However, for distributed web-based and distributed coordination systems (described in Chapter 12 and Chapter 13 respectively) the corresponding architectural style is somewhat diluted in combinations and/or examples. While it could be argued that there could be more architectural styles and/or different approaches for distributed application development, the book also reflects that distributed systems design, implementation, and deployment is still a changing field, there is not a unique point of view.

The book can also be divided in three parts, reflecting three different points of view or abstraction levels related to distributed systems:

- Part I: general concepts/view, including
 - Chapter 1: Introduction.
 - Chapter 2: Architectures.
- Part II: principles, including
 - Chapter 3: Processes.
 - Chapter 4: Communication.
 - Chapter 5: Naming.
 - Chapter 6: Synchronization.
 - Chapter 7: Consistency and Replication.
 - Chapter 8: Fault Tolerance.
 - Chapter 9: Security.
- Part III: distributed systems development approaches and examples
 - Chapter 10: Distributed Object-Based Systems.
 - Chapter 11: Distributed File Systems.
 - Chapter 12: Distributed Web-Based Systems.
 - Chapter 13: Distributed Coordination-Based Systems.

While some of the book contents maintain the style and abstraction level of the previous edition, most of the explanations have been raised to a higher level of abstraction. This change in style leads to easier reading, and also makes this book similar in style and contents to that of George Coulouris, Jean Dollimore, and Tim Kindberg [2]. Most of the courses in computer science/computer engineering schools on distributed systems, distributed programming, and distributed computing use at least one of these two books, and many use both of them.

The book has a very good associated web page including teaching material as well as errata [3]. There are two sets of slides in [3], which can be used for teaching: one maintained by the publisher and one maintained by one of the authors (Maarten van Steen), the latter being highly recommended, since reflects the direct authors' updated view and experience in the field.

References

- [1] Distributed Systems: Principles and Paradigms, Andrew S. Tanenbaum, Maarten van Steen, Prentice Hall, ISBN 0130888931, 2002.
- [2] Distributed Systems: Concepts and Design (4th Edition), George Coulouris, Jean Dollimore, Tim Kindberg, Addison Wesley/Pearson Education, ISBN 0321263545, 2005.
- [3] http://www.distributed-systems.net/index.html/index.php?option=com_content&view=article&id=13&Itemid=22

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